CITY OF MIAMI BEACH
Office of the City Manager
Letter to Commission No. 069-2005

To: Mayor David Dermer and Members of the City Commission

Date: March 8, 2005

From: Jorge M. Gonzalez, City Manager

Subject: **BEACH RENOURISHMENT & EROSION CONTROL PROJECTS**

This letter is to serve as an update on current beach renourishment efforts and erosion control projects for the City of Miami Beach.

In 1972, Miami-Dade County entered into a 50 year agreement with the Federal Government and the Army Corps of Engineers to become the local coordinator of beach erosion projects. The County also coordinates with the Florida Department of Environmental Protection for grant agreements that typically last between three and four years for beach nourishment projects. More specifically the County's Department of Environmental Resources Management (DERM) has the overall responsibility to plan, program, design, and execute all beach renourshiment and erosion control projects for Miami Beach.

Effects of 2004 Hurricanes Season

Miami-Dade County experienced the peripheral effects of Hurricanes Frances and Jeanne which made landfall in central Florida in September of this past year. In general, the storm effects with regard to beach erosion were minimal, with no significant beach loss at any location. A report describing the post-storm assessment was conducted by the County after each of these storms.

Erosion is typically experienced in the Miami Beach hotspots during the winter season, which is a natural seasonal occurrence where higher wave energy erodes the beach. This season has produced weather that caused serious erosion at the hot spots of 29th Street, 45th Street, and 55th Street during the winter months after the hurricane season. During the summer months, wave action has a lower energy rate since the winds come from the southeast. This summer shift allows for a natural recovery period for the beaches.

Beach Funding

During the recent November 2nd elections, all eight items of the General Obligation Bond proposal were passed in Miami-Dade County. Included in Item Two of the proposal was $17.5 million to provide the county share of long term beach nourishment. The amount of the funding allocation is based on the County's current capital plan beach nourishment needs, which includes the pending Alternative Sand Test Beach Project, as well as two future nourishment projects.

Truck Hauling Renourishment Projects

During the summer of 2004, the Miami-Dade County DERM submitted an application to the Florida Department of Environmental Protection (FDEP) to permit two truck hauling projects that would renourish the beach at three locations: 29th Street, 45th Street, and 55th Street.

The Miami-Dade County DERM has since split the permit into two applications for beach renourishment projects; first at 29th Street and the second at 45th Street and 55th Street. The FDEP has approved the renourishment project south of the 32nd Street breakwater as required mitigation work for the breakwater project. While the breakwater structure has generally performed well and as expected, there was erosion on the south side that needed renourishment. Renourishment work began on February 28, 2005 with initial hauling of beach sand from the County's stored sand pile at 47th Street. By March 7, 2005, additional sand will be trucked in to Miami Beach from a sand source south of Lake Okeechobee. The current plan calls for the placement of approximately 100,000 cubic yards of sand in the vicinity of the 32nd Street breakwater structures to mitigate erosion south of the structures, as required by permit conditions. It is estimated that this renourishment project will take two months to complete.

A second permit application was submitted to the FDEP to renourish the beach at 45th Street and 55th Street. This permit has been delayed due to the unusual 2004 hurricane season, which has backed up the permit process for the FDEP. Additionally, this permit application requires a biological opinion by the Florida Fish & Wildlife Conservation Commission, which could delay the permit for several months, also due to the 2004 hurricane season. A biological opinion is required to ensure minimal impacts to endangered sea turtles that nest along Miami Beach.

At the City Administration's urging and in order to temporarily alleviate the erosion problem at 45th Street and 55th Street, the County will submit an additional FDEP Coastal Construction Control Line (CCCL) application by March 11, 2005, that will allow sand to be placed on the beach above the Mean High Water Line. This application will not require a review by the Florida Fish & Wildlife Commission and will be a temporary solution to remedy the erosion in this area until the truck hauling permit has been approved.

Miami-Dade County DERM and the City of Miami Beach have met with members of the Triton Towers Association, 2899 Collins Avenue, on February 16, 2005 and with the Manager of the Eden Rock, on February 28, 2005 to discuss the permit process for each renourishments project and the status of each application.

The Environmental Division of Public Works is working closely with Miami-Dade County DERM to assist in expediting the permit process and coordinate any logistical requirements for each project.

63rd Street Submerged Breakwater Reef Ball Project

Section 227 of the Water Resource and Development Act of 1996 (WRDA '96) authorized the National Shoreline Erosion Control Development and Demonstration Program (NSECDDP). The program is aimed at advancing the state-of-the-art and innovative shore protection solutions on the open coast in coastal shoreline protection. The section 227 legislation provides a vehicle by which shore protection devices, designs, and methods can be constructed, monitored, and evaluated.

A design has been selected using Reef Ball™ units as an offshore reef breakwater under this program in the 63rd Street area. This area is traditionally an erosion hot spot. Reef Balls™ are hollow concrete hemispheres designed for marine habitat enhancement. Placed in parallel rows as an offshore breakwater, Reef Balls™ will reduce the wave energy reaching the beach both by physically blocking the incident waves and by generating turbulence through the interstices in and around the concrete units. Reef Balls™ are usually fastened to a hard substrate with fiberglass reinforcing bars. However, the Miami site has a sandy substrate. To provide stability and prevent the units from sinking into the sand, the Reef Balls™ will be mounted on concrete articulated mattresses placed on a bedding layer.

The purpose of the breakwater is to reduce wave energy reaching the beach, thereby reducing the movement of the sand, extending the time between renourishments, and increasing the storm protection to adjacent buildings. Additional benefits of the Reef Ball™ design include improved habitat for marine life, and as the Reef Balls™ become covered with marine growth, the design will provide recreational benefits as a snorkeling trail.

The design of the project was completed in September of 2004. However, the project funding will expire in September 30, 2005 unless congress votes this spring to approve an extension of the funding until 2009. As a result the project is currently on hold. If the project funding is approved for an extension, it is estimated that construction would begin in the summer of 2006. The estimated project cost will total $2.5 million.

Comprehensive Beach System Evaluation

Miami-Dade County and the City are developing through a coastal engineering consultant, a comprehensive evaluation of the beach segment from Bakers Haulover to Government Cut. The report will contain a number of elements including an update of the sediment (sand) budget for that segment, an evaluation of existing and proposed breakwater structures, a technical and economic evaluation for potential solutions to erosional areas, and recommendations for project implementation and management over the next five years. The County has recently issued $117,000 in work orders and Coastal Systems International has initiated work on the comprehensive evaluation as of March 2, 2005.

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